QuickStart

Trimble's Planning Module
Visual Analysis of Visibility for GPS, GLNASS and Geostationary Satellites (WAAS)
Written for version 2.7
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Background: GPS mission planning is a critical component of any project involving GPS under challenging conditions (under canopy or in mountainous terrain). Trimble's Planning Module (ver 2.7) has many new features that make this a powerful stand-alone tool to analyze satellite visibility for your GPS mission. Previous users of QuickPlan will find this much more user-friendly.

Installation:

- Go to http://www.trimble.com/support.html
- Scroll down and click on "Planning Software"
- Proceed to the Download section and Select Trimble Planning Software. This is a 22MB file and may take some time
- You may also download the latest Ephemeris file (downloads a current.ssf). If Pathfinder Office is already installed, place the file in the C:\Program Files\Common Files\Trimble\Almanacs directory.

Program Setup:

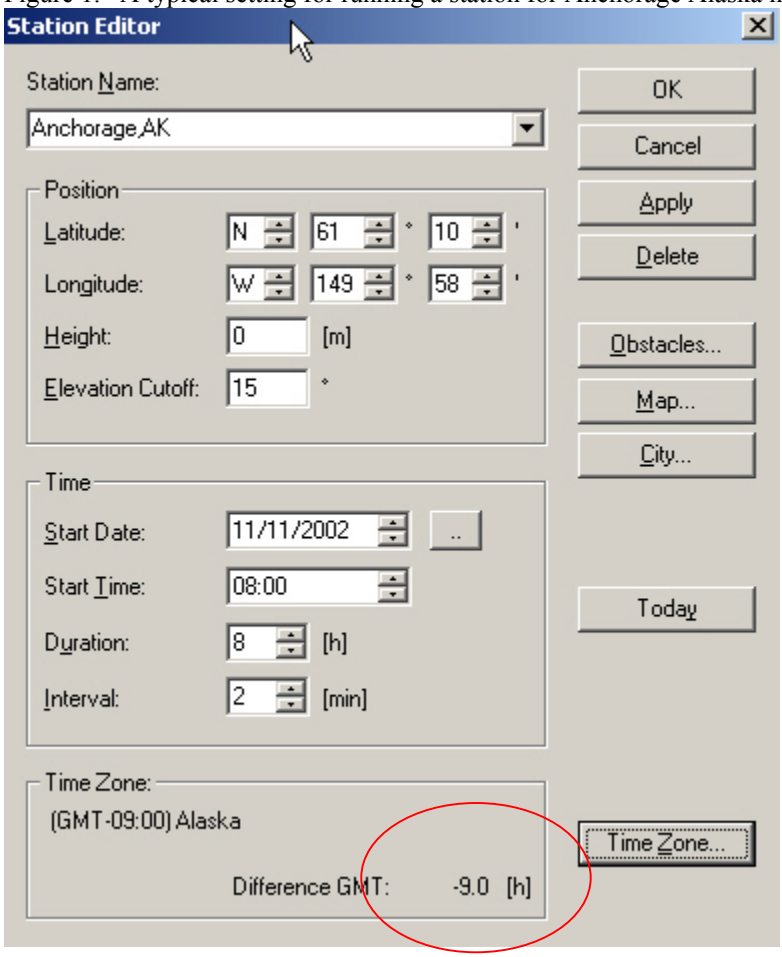
As with any planning software, setting up the program for the correct time, place and satellites is critical for obtaining correct information. Read the nice help document found in C:\Program Files\Common Files\Trimble\Planning\manual for more detailed instructions on the program. Here are my quick setup tips to get you running in no time:

- Open Program from START button, Trimble Office, Utilities, Planning.
- Load the current.ssf file downloaded from the Trimble website above, or the latest alamanac.ssf from your datalogger.
  - Select Almanac | Import | SSF and select current.ssf Check file date of ssf to ensure the most current date.
  - A message will show you satellites that could be considered. Press OK
- Setting up a station.
  - Select File | Station. Click on the City tab and select the closest city to your location.
  - Enter 15 degrees in the Elevation Cutoff Area.
  - Select the date, start time, Duration
  - Keep interval at 10 minutes if planning for an entire day. Otherwise, select 1 or 2 minutes if only interested in a 5-8 hour time block.
  - Time Zone: Check the time zone by pressing the Time Zone tab. Be sure the appropriate time is set: For Alaskans Click on GMT-0900 Alaska and check or uncheck the Daylight Saving Time for the appropriate time of year.
  - Once completed, click OK
- View Satellites.
  - You are now ready to view the results.
  - On the bar located beneath the buttons, be sure to enable only the GPS Satellite Systems (Leave GLOSNASS and WAAS) unchecked, unless you have a Trimble PRO XRS or GLOSNASS enabled receiver.
  - Click on Graphs | Number of Satellites. Click on Graphs | DOP | DOP – Position. Select Windows | Tile horizontally to view both at the same time (See figure 2 below)
- Creating and saving a Curtain.
  - In the older QuickPlan utility, creating a curtain was cumbersome and could never be saved. Now you may create, import and save a curtain (now called obstacles).
  - Click on File | Station.
    - From the Station dialog box, click on the Obstacles button.
    - Simply press and left mouse drag the mask representing the area of occluded sky. Pressing the Write button will save this for future reference.
    - Use file management to store these obstacle files in the Trimble Planning folder!

FIELD HINTS:

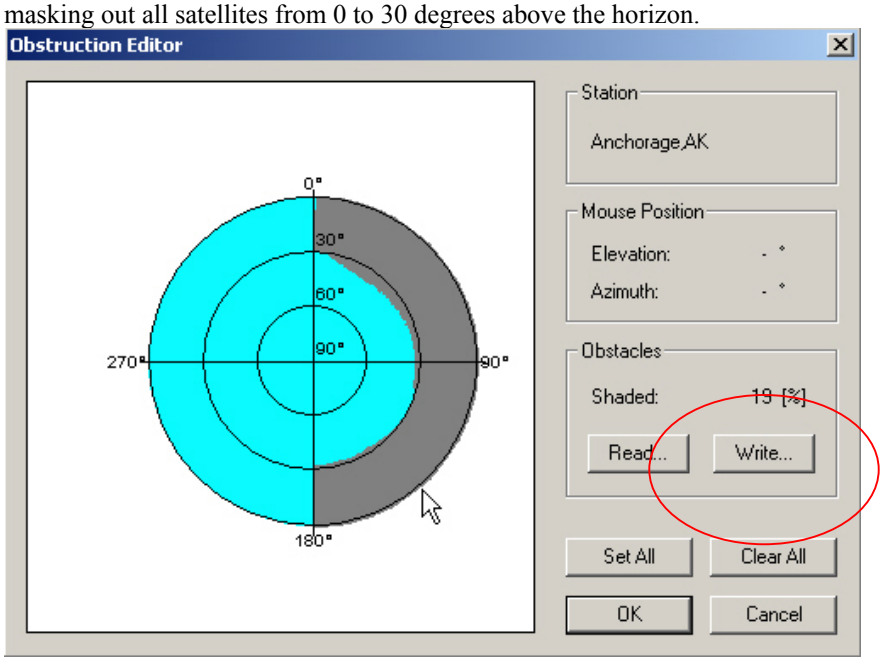
Take the charts out into the field to assist you in the GPS mission of the day. If I have a job down in a steep ravine, and up on a hillside under canopy, I will collect data in the valley using a PDOP chart set to an appropriate obstacle chart. I will maximize my efficiency under canopy by only collecting data with the most number of satellites to offset multipath and low signal-to-noise ratios.

Figure 1. A typical setting for running a station for Anchorage Alaska in November (Standard Time).



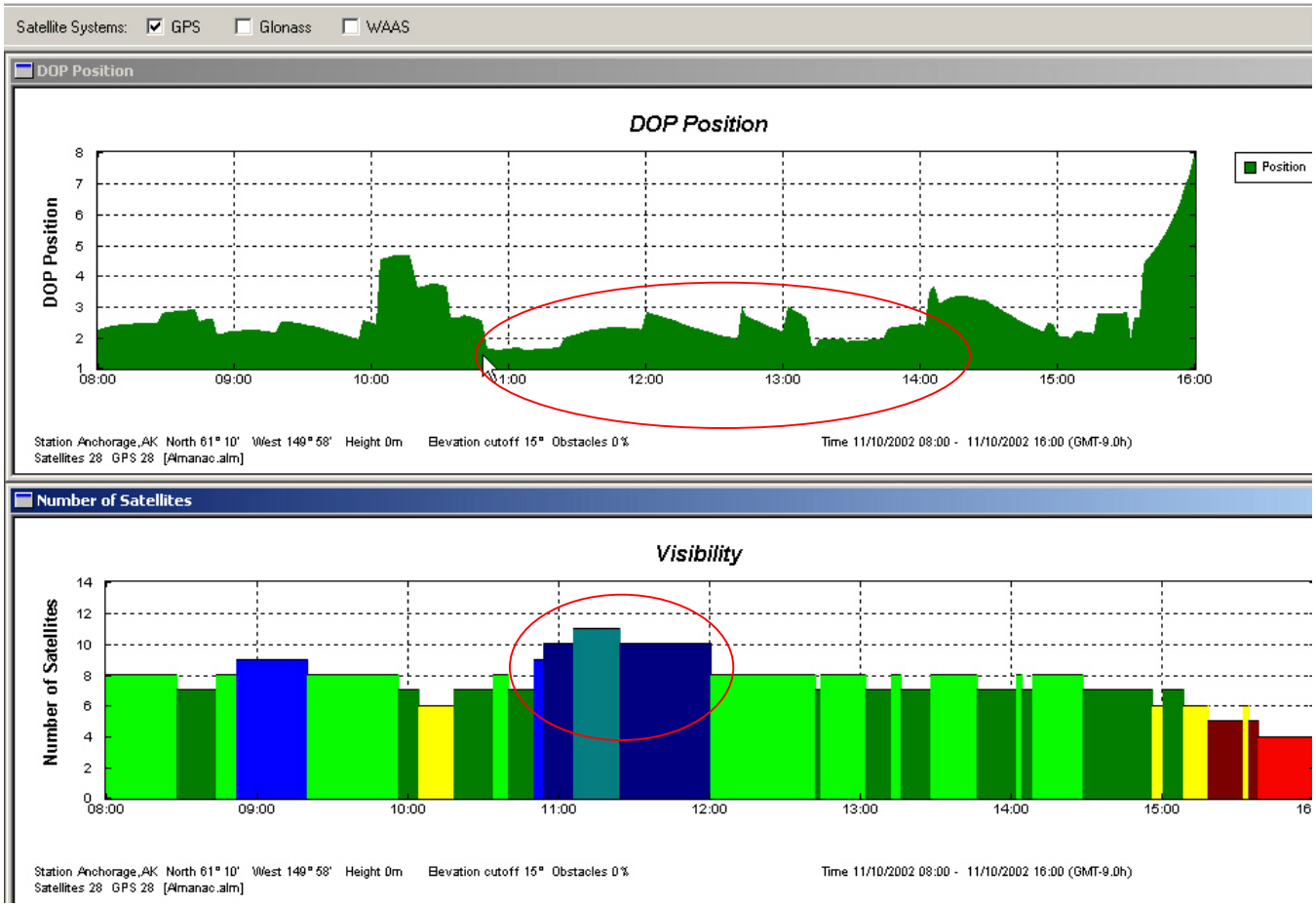
Be sure to check the time!

Figure 2. The Obstruction Editor dialog box. Seen here is an estimate of a obstruction in the Eastern skies, effectively masking out all satellites from 0 to 30 degrees above the horizon.



You can now save this to a file!

Figure 3. A Screen Shot showing PDOP and Number of satellites visible for Anchorage Alaska, November 11, 2002. Elevation cutoff of 15 degrees and a time setting between 0800 and 1600 (GMT-0900).



Analysis:

The lowest PDOP values are from 1045 to 1400 hours. For work in the **open**, I can set my datalogger PDOP mask to 3 or lower and ensure more accurate data during these times. From 1045 to noon, there are at least 10 satellites in view. This is the best time for trail work **under-canopy** since I am maximizing the number of satellites for the GPS receiver to choose for solution. This enables the receiver to switch more efficiently between satellites when multipath or low signal strength are encountered.

The high PDOP environment and low number of satellites around 1530 hours will force me to take my "lunch break" and stop data collecting. If anything happens to block the one of four satellites visible during that time, I run the risk of dropping below the 4 satellite threshold for good 3D data.